Engineering Interpretations

Building Site Development

Soil properties influence development of building sites, including the selection of the site, the design of the structure, construction, post construction performance, and maintenance. Soil limitation ratings of slight, moderate, and severe are given for shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns, landscaping, and golf fairways.

Shallow Excavations

Shallow excavations are trenches or holes dug in the soil to a maximum depth of 5 or 6 feet. They are used for pipelines, sewer lines, telephone and power transmission lines, basements, open ditches, and cemeteries. The ratings are based on the soil properties that influence ease of digging and resistance to sloughing.

Dwellings With or Without Basements

These are single-family houses of three stories or less. The foundation is assumed to be spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or the depth of maximum frost penetration, whichever is deeper, for houses without basements, or at a depth of 7 feet if a basement is constructed. The ratings are based on properties affecting soil strength and settlement under a load, and those that affect excavation and construction costs.

Small Commercial Buildings

Limitation ratings are given for the undisturbed soil on which small commercial buildings of less than three stories without basements are built. The foundation is assumed to be placed on spread footings of reinforced concrete at a depth of 2 feet or the depth of maximum frost penetration, whichever is deeper.

Local Roads and Streets

Limitation ratings are given for the use of soils for construction of improved local roads and streets that have all-weather surfacing, commonly of asphalt, gravel with binder in it, or concrete, and that are expected to carry automobile traffic all year. These roads and streets are graded to shed water, and conventional drainage measures are provided. With the probable exception of the hard surface, roads and streets are built mainly from the soil at hand.

Lawns, Landscaping, and Golf Fairways

The soils are rated for their use in establishing and maintaining turf for lawns and golf fairways and ornamental trees and shrubs for residential type landscaping. The ratings are based on the use of soil material at the location with some land smoothing. Irrigation may or may not be needed and is not a criterion in rating. Traps, trees, roughs, and greens are not considered as part of the golf fairway. The properties considered are those listed that affect plant growth and trafficability after vegetation is established.

This subsection includes:

• (a) Building Site Development

Map symbol and soil name	Dwellings without bas	ements	Dwellings with basem	ments	Small commercial buil	ldings	Local roads and str	reets	Lawns and landscap	oing
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value 	Rating class and limiting features	Value 	Rating class and limiting features	Value
14C2: Armstrong	 Very limited ~shrink-swell	 1.00	 Very limited ~wetness	1.00	 Very limited ~shrink-swell		 Very limited ~low strength	 1.00	 Slightly limited ~wetness	 0.28
	<pre>(very limited) ~wetness (moderately limited) ~slope (slightly limited)</pre>	 0.59 0.15 	<pre>(very limited) ~shrink-swell (very limited) ~slope (slightly limited)</pre>	1.00	<pre>(very limited) ~slope (limited) ~wetness (slightly limited)</pre>	0.83	<pre>(very limited) ~shrink-swell (very limited) ~wetness (slightly limited)</pre>	1.00	(slightly limited)	
14D2: Armstrong	 Very limited ~shrink-swell (very limited) ~slope (limited) ~wetness (moderately limited)	 1.00 0.76 0.59	 Very limited ~wetness (very limited) ~shrink-swell (very limited) ~slope (limited)	İ	 Very limited ~slope (very limited) ~shrink-swell (very limited) ~wetness (slightly limited)	1.00	 Very limited ~low strength (very limited) ~shrink-swell (very limited) ~slope (limited)	1.00	 Limited ~slope (limited) ~too clayey (moderately limited) ~wetness (slightly limited)	0.63
16C: Bevier	 Very limited ~shrink-swell (very limited) ~wetness (very limited)	1.00	 Very limited ~wetness (very limited) ~shrink-swell (very limited)	1.00	 Very limited ~shrink-swell (very limited) ~wetness (very limited) ~slope (limited)	1.00	 Very limited ~low strength (very limited) ~shrink-swell (very limited) ~wetness (very limited)	1.00	 Very limited ~wetness (very limited) ~too clayey (moderately limited)	1.00
17E2: Purdin	 Very limited ~shrink-swell (very limited) ~slope (very limited) ~wetness (moderately limited)	 1.00 1.00 0.37	 Very limited ~slope (very limited) ~shrink-swell (very limited) ~wetness (limited)	İ	 Very limited ~slope (very limited) ~shrink-swell (very limited)	1.00	 Very limited ~shrink-swell (very limited) ~slope (very limited) ~low strength (very limited)	1.00	 Very limited ~slope (very limited) ~too clayey (moderately limited)	1.00

Map symbol and soil name	Dwellings without bas	ements	Dwellings with basem	ents	Small commercial buildings		Local roads and streets		Lawns and landscap	ping
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
17F2: Purdin	 Very limited ~slope (very limited) ~shrink-swell (very limited) ~wetness (moderately limited)	İ	 Very limited ~slope (very limited) ~shrink-swell (very limited) ~wetness (limited)	İ	 Very limited ~slope (very limited) ~shrink-swell (very limited)	1.00	 Very limited ~slope (very limited) ~shrink-swell (very limited) ~low strength (very limited)	 1.00 1.00 	 Very limited ~slope (very limited) ~too clayey (moderately limited)	1.00
19E: Vanmeter	- Very limited ~shrink-swell (very limited) ~slope (limited)	 1.00 0.91	 Very limited ~shrink-swell (very limited) ~slope (limited) ~soft bedrock <40" (slightly limited)	İ	 Very limited ~slope (very limited) ~shrink-swell (very limited)	 1.00 1.00	 Very limited ~low strength (very limited) ~shrink-swell (very limited) ~slope (limited)	 1.00 1.00 0.96	 Limited ~slope (limited) ~depth to bedrock (slightly limited)	0.96
19F: Vanmeter	 Very limited ~slope (very limited) ~shrink-swell (very limited)	1.00	 Very limited ~slope (very limited) ~shrink-swell (very limited) ~soft bedrock <40" (slightly limited)	j	 Very limited ~slope (very limited) ~shrink-swell (very limited)	1.00	 Very limited ~low strength (very limited) ~slope (very limited) ~shrink-swell (very limited)	 1.00 1.00 1.00	(very limited) ~too clayey (moderately limited)	1.00
22B: Adco	 Very limited ~shrink-swell (very limited) ~wetness (limited)	 1.00 0.79 	 Very limited ~wetness (very limited) ~shrink-swell (very limited)	İ	 Very limited ~shrink-swell (very limited) ~wetness (moderately limited)	0.45	 Very limited ~low strength (very limited) ~shrink-swell (very limited) ~wetness (moderately limited)	 1.00 1.00 0.45	 Moderately limited ~wetness (moderately limited) 	0.45

Map symbol and soil name	Dwellings without basements		Dwellings with baseme	ents	Small commercial build	dings	Local roads and str	eets	Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value 	Rating class and limiting features	Value	Rating class and limiting features	Value _ _
23D2:		I	I	I	I	I	1	1	I	1
Gorin	Very limited -shrink-swell (very limited) -wetness (moderately limited) -slope (slightly limited)		Very limited ~wetness (very limited) ~shrink-swell (very limited) ~slope (slightly limited)	 1.00 1.00 0.15	Very limited ~shrink-swell (very limited) ~slope (limited) ~wetness (slightly limited)	 0.83 	Very limited -low strength (very limited) -shrink-swell (very limited) -wetness (slightly limited)	 1.00 1.00 0.28	Slightly limited ~wetness (slightly limited) 	0.28
Winnegan	Very limited		 Limited	 	 Very limited	<u> </u>	 Very limited		 Limited	
	<pre> ~shrink-swell (very limited) ~slope (limited) ~wetness (moderately limited)</pre>		<pre> ~wetness (limited) ~shrink-swell (limited) ~slope (limited)</pre>	 0.99 0.77 0.76	 -slope (very limited) -shrink-swell (very limited)	 1.00 1.00	~low strength (very limited) ~shrink-swell (very limited) ~slope (limited)	 1.00 1.00 0.63	 ~slope (limited) 	0.63
24D2: Gara	 - Limited ~slope (limited) ~shrink-swell (moderately limited)	0.45	 Limited ~slope (limited) ~shrink-swell (moderately limited)	 0.45	 Very limited ~slope (very limited) ~shrink-swell (moderately limited)	j	 Very limited ~low strength (very limited) ~slope (limited) ~shrink-swell (moderately limited)	0.63	 Limited ~slope (limited) 	0.63
24E2: Gara	 Very limited ~slope (very limited) ~shrink-swell (moderately limited)	 1.00 0.45 	 Very limited ~slope (very limited) ~shrink-swell (moderately limited)	 1.00 0.45 	 Very limited ~slope (very limited) ~shrink-swell (moderately limited)	j	 very limited ~slope (very limited) ~low strength (very limited) ~shrink-swell (moderately limited)	 1.00 1.00 0.45	 Very limited ~slope (very limited) 	1.00

Map symbol and soil name	 Dwellings without base 	ements	Dwellings with basem	ents	 Small commercial build 	dings	 Local roads and str 	eets	Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
24F2: Gara	 Very limited ~slope (very limited) ~shrink-swell (moderately limited)	1.00	 Very limited ~slope (very limited) ~shrink-swell (moderately limited)	0.45	 Very limited ~slope (very limited) ~shrink-swell (moderately limited)	 1.00 0.45	 Very limited ~slope (very limited) ~low strength (very limited) ~shrink-swell (moderately limited)	 1.00 1.00 0.45	 Very limited ~slope (very limited) 	1.00
26B2: Leonard	 Very limited ~shrink-swell (very limited) ~wetness (very limited)	1.00	 Very limited ~wetness (very limited) ~shrink-swell (very limited)	 1.00 1.00 	 Very limited ~shrink-swell (very limited) ~wetness (limited) ~slope (slightly limited)	 1.00 0.81 0.15	(very limited) ~shrink-swell (very limited)	 1.00 1.00 0.81	 Limited ~wetness (limited) ~too clayey (moderately limited) 	0.81
28E2: Winnegan	 Very limited ~shrink-swell (very limited) ~slope (very limited) ~wetness (moderately limited)	1.00	 Very limited ~slope (very limited) ~shrink-swell (very limited) ~wetness (limited)	 1.00 1.00 0.99	 Very limited ~slope (very limited) ~shrink-swell (very limited)	 1.00 1.00	(very limited)	 1.00 1.00 1.00	 Very limited ~slope (very limited)	 1.00
28F: Winnegan		1.00	 Very limited ~slope (very limited) ~shrink-swell (limited) ~wetness (limited)	 1.00 1.00 0.99	 Very limited ~slope (very limited) ~shrink-swell (very limited)	1.00	 Very limited ~low strength (very limited) ~slope (very limited) ~shrink-swell (very limited)	 1.00 1.00 1.00	 very limited ~slope (very limited) 	1.00

Map symbol and soil name	Dwellings without bas	Dwellings without basements		Dwellings with basements		Small commercial buildings		eets	Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
31:	I	i I	I	i I	I	i I	I	l	I	l
Putnam	Very limited ~shrink-swell (very limited) ~wetness (very limited)	 1.00 1.00 	Very limited ~wetness (very limited) ~shrink-swell (very limited)	 1.00 1.00 	Very limited ~shrink-swell (very limited) ~wetness (limited)	 1.00 0.99 	(very limited)	 1.00 1.00 0.99	Limited ~wetness (limited)	 0.99
40: Arbela	 Very limited ~flooding (very limited) ~wetness (very limited) ~shrink-swell (moderately limited)	 1.00 1.00 0.45	 Very limited ~flooding (very limited) ~wetness (very limited) ~shrink-swell (slightly limited)	 1.00 1.00 0.27	 Very limited ~flooding (very limited) ~wetness (very limited) ~shrink-swell (moderately limited)	 1.00 1.00 0.45	 Very limited ~low strength (very limited) ~flooding (very limited) ~wetness (very limited)	1.00	 very limited ~wetness (very limited) ~flooding (moderately limited)	 1.00 0.60
43: Chariton	 Very limited ~shrink-swell (very limited) ~wetness (very limited)	 1.00 1.00	 Very limited ~wetness (very limited) ~shrink-swell (limited)	 1.00 0.75	 Very limited ~shrink-swell (very limited) ~wetness (very limited)	 1.00 1.00	 Very limited ~low strength (very limited) ~shrink-swell (very limited) ~wetness	 1.00 1.00	 Very limited ~wetness (very limited) 	 1.00
44B: Gifford	 Very limited ~wetness (very limited) ~shrink-swell (moderately limited)	 1.00 0.45	 Very limited ~wetness (very limited) ~shrink-swell (moderately limited)	 0.57	Limited -wetness (limited) -shrink-swell (moderately limited) -slope (slightly limited)	 0.99 0.45 0.15	(very limited)	1.00	Limited -wetness (limited) -too clayey (moderately limited)	0.99

Map symbol and soil name	Dwellings without base 	ements	Dwellings with basem	Dwellings with basements		Small commercial buildings 		Local roads and streets		Lawns and landscaping 	
	Rating class and limiting features	Value 	Rating class and limiting features	Value 	Rating class and limiting features	Value 	Rating class and limiting features	Value 	Rating class and limiting features	Value 	
44C2:	I	I	I	I	I	I	1	I	I	I	
Gifford	Very limited ~shrink-swell (very limited) ~wetness (very limited) ~slope (slightly limited)	 1.00 1.00 0.15	Very limited ~wetness (very limited) ~shrink-swell (very limited) ~slope (slightly limited)	 1.00 1.00 0.15	Very limited ~shrink-swell (very limited) ~wetness (limited) ~slope (limited)	 1.00 0.99 0.83	Very limited -low strength (very limited) -shrink-swell (very limited) -wetness (limited)	 1.00 1.00 0.99	Limited ~wetness (limited) ~too clayey (moderately limited)	0.99	
46:		 		 							
Vesser	<pre>(very limited) ~flooding (very limited)</pre>	 1.00 0.45	Very limited ~flooding (very limited) ~wetness (very limited) ~shrink-swell (moderately limited)	 1.00 0.45	Very limited ~flooding (very limited) ~wetness (very limited) ~shrink-swell (moderately limited)	1.00	Very limited -low strength (very limited) -wetness (very limited) -flooding (very limited)	 1.00 1.00 1.00	Very limited ~wetness (very limited) ~flooding (moderately limited)	1.00	
47: Zook	 Very limited	İ	 Very limited	 	 Very limited		 Very limited		 Very limited		
2001	<pre> -wetness (very limited) -flooding (very limited)</pre>	1.00	~flooding (very limited) ~wetness (very limited) ~shrink-swell (very limited)	1.00	~flooding (very limited) ~wetness (very limited) ~shrink-swell (very limited)	 1.00 	<pre>~low strength (very limited) ~wetness (very limited) ~flooding (very limited)</pre>	j	<pre>~wetness (very limited) ~too clayey (moderately limited)</pre>	0.60	
49: Dockery	 Very limited		 Very limited		 Very limited		 Very limited		 Moderately limited		
DOCKET A	~flooding (very limited)	İ	~flooding (very limited)	İ	~flooding (very limited)	İ	-flooding (very limited)	j	-flooding (moderately limited)		
	<pre>~wetness (moderately limited) ~shrink-swell (moderately limited)</pre>	0.45	~wetness (very limited) ~shrink-swell (moderately limited)	1.00 0.38	<pre> ~shrink-swell (moderately limited) ~wetness (slightly limited)</pre>	0.45	~low strength (very limited) ~shrink-swell (moderately limited)	1.00 0.45	~wetness (slightly limited) 	0.28	

Map symbol and soil name	Dwellings without base	Dwellings without basements		ents	Small commercial buildings		Local roads and streets		Lawns and landscaping	
	Rating class and limiting features	Value 	Rating class and limiting features	Value 	Rating class and limiting features	Value 	Rating class and limiting features	Value 	Rating class and limiting features	Value
49: (cont)										
Tice 54B: Vigar	-flooding (very limited) -wetness (limited) -shrink-swell (moderately limited)	1.00 0.99 0.45	Very limited ~flooding (very limited) ~wetness (very limited) ~shrink-swell (moderately limited)	1.00 1.00 0.45	Very limited	1.00 0.60 0.45	Very limited ~flooding (very limited) ~low strength (very limited) ~wetness (limited) Very limited ~low strength	1.00	Limited ~wetness (limited) ~flooding (moderately limited) Not limited	0.60
	<pre>(moderately limited) ~wetness (moderately limited)</pre>	0.45	<pre>(very limited) ~shrink-swell (slightly limited)</pre>	 0.29 	<pre>(moderately limited) ~slope (slightly limited) </pre>	 0.15 	<pre>(very limited) ~shrink-swell (moderately limited) </pre>	 0.45 		
55B: Vigar	Moderately limited ~shrink-swell (moderately limited) ~wetness (moderately limited)	0.45	 Very limited ~wetness (very limited) ~shrink-swell (slightly limited)	 1.00 0.29	 Moderately limited ~shrink-swell (moderately limited) ~slope (slightly limited)	 0.45 0.15	 Very limited ~low strength (very limited) ~shrink-swell (moderately limited)	 1.00 0.45	 Not limited 	
Zook	- Very limited ~wetness (very limited) ~flooding (very limited) ~shrink-swell (very limited)	1.00	 Very limited ~flooding (very limited) ~wetness (very limited) ~shrink-swell (very limited)	1.00	 Very limited ~flooding (very limited) ~wetness (very limited) ~shrink-swell (very limited)	 1.00 	 Very limited ~low strength (very limited) ~wetness (very limited) ~flooding (very limited)	j	 Very limited ~wetness (very limited) ~too clayey (moderately limited) ~flooding (moderately limited)	0.60

	1		1		1					
Map symbol and soil name	 Dwellings without base 	ements	Dwellings with basem	ents	 Small commercial build 	dings	 Local roads and str 	eets	 Lawns and landscap 	ing
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
55B: (cont) Excello	Very limited	1	Very limited	1.	Very limited	l:	Very limited	1,	Very limited	
	<pre> ~flooding (very limited) ~wetness (very limited) ~shrink-swell (moderately limited)</pre>	1.00 1.00 0.45	~flooding (very limited) ~wetness (very limited) ~shrink-swell (moderately limited)	1.00 1.00 0.45	~flooding (very limited) ~wetness (very limited) ~shrink-swell (moderately limited)	1.00 ['] 1.00 	~flooding (very limited) ~wetness (very limited) ~low strength (very limited)	1.00	~wetness (very limited) ~flooding (moderately limited) 	1.00 0.60
56: Wabash	Very limited -wetness (very limited) -shrink-swell (very limited) -flooding (very limited)	İ	 Very limited ~shrink-swell (very limited) ~flooding (very limited) ~wetness (very limited)	 1.00 	 Very limited ~flooding (very limited) ~shrink-swell (very limited) ~wetness (very limited)	 1.00 1.00	 Very limited ~low strength (very limited) ~wetness (very limited) ~shrink-swell (very limited)	1.00 1.00	 Very limited ~wetness (very limited) ~flooding (moderately limited) ~too clayey (moderately limited)	0.60
57: Floris	 Very limited ~flooding (very limited) ~shrink-swell (moderately limited) ~wetness (slightly limited)	 0.45 	 Very limited ~flooding (very limited) ~wetness (limited) ~shrink-swell (slightly limited)	İ	 Very limited ~flooding (very limited) ~shrink-swell (moderately limited)	j	 Very limited ~flooding (very limited) ~low strength (limited) ~shrink-swell (moderately limited)	 1.00 0.78 0.45	 Very limited ~flooding (very limited) 	
69: Floris	 Very limited ~flooding (very limited) ~wetness (slightly limited)	j	 Very limited ~flooding (very limited) ~wetness (limited)	 1.00 0.61	 Very limited ~flooding (very limited)	 1.00 	 Very limited ~flooding (very limited)	 1.00 	 Very limited ~flooding (very limited)	1.00
71C: Plainfield	 Not limited 	 	 Not limited 	 	 Limited ~slope	 0.68	 Not limited 	 	 Limited ~droughty	0.61

Dwellings without basements		Dwellings with basements		Small commercial buildings		Local roads and streets		Lawns and landscaping	
Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value 	Rating class and limiting features	Value
				(limited)				(limited)	
 Very limited ~slope (very limited)	1.00	 Very limited ~slope (very limited) 	1.00	 Very limited ~slope (very limited) 	1.00	 Very limited ~slope (very limited) 	1.00	 Very limited ~slope (very limited) ~droughty (limited)	1.00
 Not Rated Not Rated		 Not Rated Not Rated		 Not Rated 	İ	 Not Rated Not Rated		Not Rated Not Rated Not Rated	
 Not rated 		 Not rated 		 Not rated 		 Not rated 		 Not rated 	
 Not rated 		 Not rated 		 Not rated 		 Not rated 		Not rated	
	limiting features	Very limited	Very limited	Very limited	limiting features	limiting features	limiting features limi	limiting features limi	limiting features limi